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Subject:

2018 Second Quarter Operation Maintenance and Monitoring Report,  
Operable Unit 2, Northrop Grumman Systems Corporation and Naval Weapons  
Industrial Reserve Plant (NWIRP) Sites, Bethpage, New York.  
(NYSDEC Site #s 1-30-003A and B)

ENVIRONMENT

Dear Jason:

On behalf of Northrop Grumman Systems Corporation (Northrop Grumman), Arcadis is providing the NYSDEC with the 2018 Second Quarter Operation Maintenance and Monitoring Report (Report). This Report was prepared to document the operation, maintenance, and monitoring (OM&M) activities conducted for the on-site portion of the Operable Unit 2 (OU2) groundwater remedy and the results of ongoing volatile organic compound (VOC) and inorganic monitoring in groundwater to meet the remedial objectives set forth in the March 2001 OU2 Record of Decision (ROD).

Table 1 summarizes OU2 remedial system performance operational data, total mass removal, and water balance. Tables 2 and 3 provide the analytical results for remedial system water and vapor samples for this period, respectively. Tables 4A and 4B provide the air modeling inputs and outputs and resulting analyses, based on quarterly vapor samples collected from the Tower 96 and Tower 102 systems, respectively, for this period. Tables 5A and 5B provides a summary of percent mass emittance of TCE from second quarter 2017 through second quarter 2018. Table 6, Table 7 and Table 8 provide the validated analytical results of groundwater monitoring for this period. Figures 1 through 3 show the Locations of Wells and Onsite Groundwater Remedy, ONCT Groundwater Extraction and Treatment System Site Plan, and the ONCT Groundwater Extraction and Treatment System Schematic, respectively.

Date:  
August 31, 2018

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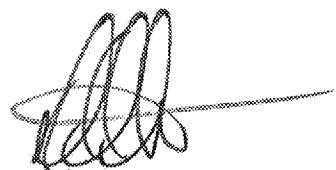
Our ref:  
NY001496.22TM.RPTI4  
NY001496.22TM.NAVI4

Mr. Jason Pelton  
August 31, 2018

Please contact us if you have any questions or comments.

Sincerely,

Arcadis of New York, Inc.



David E. Stern  
Senior Hydrogeologist



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Engineer of Record

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## TABLES



Table 1

Operational Summary for the On-Site Portion of the OU2 Groundwater Remedy, Second Quarter 2018<sup>(1)</sup> Reporting Period  
 Operable Unit 2, Northrop Grumman Systems Corporation,  
 Bethpage, New York

	Quarterly Flow Rates <sup>(2)</sup> (gpm)		Quarterly Flow Volumes (MG)			Quarterly VOC Concentrations (ppb/L)		VOC Mass Removed (lbs) <sup>(3)</sup>		
	Design <sup>(4)</sup>	Average <sup>(4)</sup>	Design <sup>(4)</sup>	Actual <sup>(4)</sup>	% of Design	TCE <sup>(5)</sup>	TVOC <sup>(6)</sup>	Quarterly	Annual	Cumulative
<b>Influent Groundwater</b>										
Well 1 <sup>(11)</sup>	800	791	104.8	103.0	98%	631	660	568	1,072	47,051
Well 3R <sup>(11)</sup>	700	706	91.7	92.0	100%	332	370	284	552	91,141
Well 17 <sup>(11,12)</sup>	1,000	1,003	131.0	129.0	98%	111	140	151	293	53,320
Well 18 <sup>(11,12)</sup>	600	809	78.6	104.0	132%	46	70	61	120	6,489
Well 19 <sup>(11,12)</sup>	700	506	91.7	65.0	71%	125	150	81	150	8,530
<b>Total<sup>(3)</sup></b>	<b>3,800</b>	<b>3,815</b>	<b>498</b>	<b>493</b>	<b>99%</b>	—	—	<b>1,145</b>	<b>2,187</b>	<b>206,531</b>
<b>Effluent Groundwater<sup>(7)</sup></b>										
Calpine	100 - 400	113	--	14.8	--	--	--	--	--	--
OXY Biosparge <sup>(10)</sup>	2 - 42	0	--	0	--	--	--	--	--	--
West Recharge Basins	1,112 - 1,455	2,526	--	331.0	--	--	0.8	--	--	--
South Recharge Basins <sup>(12)</sup>	2,231	1,122	292.4	147.0	50%	--	1.4	--	--	--
<b>Total<sup>(14)</sup></b>	--	<b>3,761</b>	--	<b>493</b>	--	--	--	--	--	--
<b>Additional Flow to South Recharge Basins</b>										
Storm Water Runoff Contributing to South Recharge	--	--	--	21.7	--	--	--	--	--	--
Basins Flow Volume <sup>(14)</sup>	--	--	--	--	--	--	--	--	--	--
<b>Total Flow Volume to South Recharge Basins<sup>(12,14,15)</sup></b>			<b>292</b>	<b>169</b>	<b>58%</b>					
<b>Treatment Efficiencies<sup>(8)</sup></b>										
Tower 96 System:		99.9%								
Tower 102 System:		>99.9%								

Notes and abbreviations on last page.

Table 1  
Operational Summary for the On-Site Portion of the OU2 Groundwater Remedy, Second Quarter 2018<sup>(1)</sup> Reporting Period  
Operable Unit 2, Northrop Grumman Systems Corporation,  
Bethpage, New York

**Notes and Abbreviations:**

- (1) Quarterly reporting period: April 03, 2018 through July 03, 2018
- (2) "Design" flow rates were determined for the five remedial wells and for the South Recharge Basins based on computer modeling (ARCADIS G&M, Inc. 2003c, modified in April 2005). Flow rates for Calpine, OXY Biosparge and West Recharge Basins are typical flow rates and are provided for reader information. "Design" flow volumes represent the volume of water that should be pumped/discharged during the reporting period and is calculated by multiplying the design rate by the reporting period duration.
- (3) "Average" flow rates for the remedial wells represent the average actual pumping rates when the pumps are operational and do not take into account the time that a well is not operational. During this quarterly reporting period, the remedial wells operated for the following percentage of the time: Well 1 (99.4%), Well 3R (99.4%), Well 17 (98.1%), Well 18 (98.1%), and Well 19 (98.1%). "Actual" volumes are determined via totalized values computed by SCADA using the instantaneous flow rates transmitted from local flow meters.
- (4) "Average" flow rates for the system discharges represent the average flow rate during the entire reporting period and are determined by dividing the total flow during the reporting period by the reporting period duration. The Calpine and South Recharge Basins flow volumes are determined via totalized values computed by SCADA using the instantaneous flow rates transmitted from local flow meters. The West Recharge Basin flow is calculated by subtracting the cumulative flow to the other discharges from the total influent flow. Actual flow to the recharge basins is greater, as shown, because storm water combines with the plant effluent prior to discharge to the recharge basins.
- (5) The TCE and TVOC concentrations for the remedial wells are from the quarterly sampling event performed during this reporting period on May 10, 2018.
- (6) The TVOC concentration for the two sets of recharge basins are their respective average monthly SPDES concentration for the current quarter.
- (7) TVOC mass removed for the reporting period is calculated by multiplying the TVOC concentration from the quarterly sampling event and the quantity of water pumped during the reporting period.
- (8) There are four discharges for the effluent groundwater: South Recharge Basins, West Recharge Basins, Calpine and OXY Biosparge system. Treated water is continuously discharged to the south and west recharge basins, and is available "on-demand" to both the Calpine Power Plant (Calpine) for use as make-up water, and the biosparge remediation system operated by Occidental Chemical (OXY Biosparge).
- (9) Treatment System Efficiencies are calculated by dividing the difference between the remedial well flow weighted influent and effluent TVOC concentrations by the remedial well flow weighted influent concentration.
- (10) Occidental Chemical has not reported any water usage for the OXY Biosparge system since May 2016.
- (11) The downtime during Second Quarter 2018 was minor and due to typical operation and maintenance. See Note 12 for detail on reduced percent design flow values.
- (12) During the second quarter the pumping rates continued to be adjusted at Wells 17 through 19 to accommodate for a basin rehabilitation work at the western most of the South Basins. Rainfall events would dictate the increase or decreases in pumping needed to maintain draining of the western most of the South Basins. Average pumping rates and modified South basin recharge rates are shown above.
- (13) Total pumpage/recharge rates are accurate to ±15% due to limitations in metering.
- (14) Storm Water Runoff Volume is calculated by multiplying the adjusted tributary area and NOAA precipitation data for the reporting periods. The adjusted tributary area is tributary area that is adjusted by the runoff coefficient to exclude the infiltration volume from the total rainfall volume. The tributary area, runoff coefficient, and adjusted tributary area are from Dvirk and Bartilucci Consulting Engineers' Storm Water Permit Evaluation Report (January, 28, 2010). The NOAA precipitation data are calculated as a sum of NOAA daily precipitation data for the reporting period. NOAA precipitation data are retrieved from Station GHCND:USW00054787 - FARMINGDALE REPUBLIC AIRPORT, NY US.
- (15) Total Flow Volume to South Recharge Basins is estimated as a sum of flow volumes contributed from the Effluent Groundwater to South Recharge Basins and from Storm Water Runoff to South Recharge Basins.

--	Not Applicable	NOAA	National Oceanic and Atmospheric Administration
µg/L	micrograms per liter	SCADA	Supervisory Controls and Data Acquisition
gpm	gallons per minute	SPDES	State Pollution Discharge Elimination System
lbs	pounds	TCE	trichloroethene
MG	million gallons	TVOC	total volatile organic compounds
		VOC	volatile organic compounds

Table 2  
Concentrations of Constituents in Remedial Wells and  
Treatment System Effluents, Second Quarter 2018, Operable Unit 2,  
Northrop Grumman Systems Corporation,  
Bethpage, New York

Constituents <sup>(1)</sup> (units in µg/L)	Location ID: Sample ID: Sample Date:	WELL 1 WELL 1 5/10/2018	WELL 3R WELL 3R 5/10/2018	96 EFFLUENT 96 EFFLUENT 5/10/2018	WELL 17 WELL 17 5/10/2018
<b>Volatile Organic Compounds (VOCs)<sup>(2)</sup></b>					
1,1,1-Trichloroethane		< 2.5	<b>0.66</b>	< 0.50	<b>0.28 J</b>
1,1,2,2-Tetrachloroethane		< 5.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane		< 5.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 5.0	<b>1.4</b>	< 1.0	<b>0.83 J</b>
1,1-Dichloroethene		<b>2.7</b>	<b>3.9</b>	< 0.50	<b>1.8</b>
1,2-Dichloroethane		< 5.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		<b>4.2 J</b>	< 1.0	< 1.0	<b>0.36 J</b>
2-Butanone (MEK)		< 50	< 10	< 10	< 10
2-Hexanone (MBK)		< 25	< 5.0	< 5.0	< 5.0
4-methyl-2-pentanone (MIK)		< 25	< 5.0	< 5.0	< 5.0
Acetone		< 50	< 10	< 10	< 10
Benzene		< 2.5	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 5.0	< 1.0	< 1.0	< 1.0
Bromoform		< 5.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 10	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 10	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 5.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 5.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 5.0	< 1.0	< 1.0	< 1.0
Chloroform		< 2.5	< 0.50	< 0.50	< 0.50
Chloromethane		< 5.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		<b>5.9</b>	<b>4.2</b>	< 0.50	<b>2.9</b>
cis-1,3-Dichloropropene		< 5.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane		< 5.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		< 5.0	< 1.0	< 1.0	< 1.0
Methylene Chloride		< 2.5	< 0.50	< 0.50	< 0.50
Styrene		< 5.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		<b>20.1</b>	<b>27.8</b>	< 0.50	<b>21.3</b>
Toluene		< 5.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 2.5	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene		< 5.0	< 1.0	< 1.0	< 1.0
Trichloroethylene		<b>631</b>	<b>332</b>	<b>0.43 J</b>	<b>111</b>
Trichlorotrifluoroethane (Freon 113)		< 2.5	<b>2.1</b>	< 0.50	<b>3.7</b>
Vinyl Chloride		< 2.5	<b>2.0</b>	< 0.50	< 0.50
Xylene-o		< 5.0	< 1.0	< 1.0	< 1.0
Xylene-m,p		< 5.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>660</b>	<b>370</b>	<b>0.43</b>	<b>140</b>
<b>1,4-Dioxane<sup>(4)</sup></b>		<b>10.4</b>	<b>15.0</b>	<b>11.9</b>	<b>9.48</b>

Notes and abbreviations on last page.

Table 2  
Concentrations of Constituents in Remedial Wells and  
Treatment System Effluents, Second Quarter 2018, Operable Unit 2,  
Northrop Grumman Systems Corporation,  
Bethpage, New York

Constituents <sup>(1)</sup> (units in µg/L)	Location ID: Sample ID: Sample Date:	WELL 18 WELL 18 5/10/2018	WELL 19 WELL 19 5/10/2018	WELL 19 REP 051018-SC-1 5/10/2018	102 EFFLUENT 102 EFFLUENT 5/10/2018
<b>Volatile Organic Compounds (VOCs)<sup>(2)</sup></b>					
1,1,1-Trichloroethane		<b>0.49 J</b>	<b>0.33 J</b>	<b>0.35 J</b>	< 0.50
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		<b>1.3</b>	<b>0.68 J</b>	<b>0.72 J</b>	< 1.0
1,1-Dichloroethene		<b>3.6</b>	<b>1.6</b>	<b>1.7</b>	< 0.50
1,2-Dichloroethane		< 1.0	<b>0.43 J</b>	<b>0.38 J</b>	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10	< 10
2-Hexanone (MBK)		< 5.0	< 5.0	< 5.0	< 5.0
4-methyl-2-pentanone (MIK)		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 0.50	<b>0.40 J</b>	<b>0.46 J</b>	< 0.50
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		<b>2.9</b>	<b>16.6</b>	<b>17.1</b>	< 0.50
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
Methylene Chloride		< 0.50	< 0.50	< 0.50	< 0.50
Styrene		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		<b>14.3</b>	<b>6.6</b>	<b>6.9</b>	< 0.50
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethylene		<b>45.7</b>	<b>125</b>	<b>126</b>	< 0.50
Trichlorotrifluoroethane (Freon 113)		<b>1.7</b>	<b>1.3</b>	<b>1.4</b>	< 0.50
Vinyl Chloride		< 0.50	< 0.50	< 0.50	< 0.50
Xylene-o		< 1.0	< 1.0	< 1.0	< 1.0
Xylene-m,p		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>70</b>	<b>150</b>	<b>160</b>	<b>0</b>
<b>1,4-Dioxane<sup>(4)</sup></b>		<b>7.73</b>	<b>7.08</b>	<b>5.60</b>	<b>8.75 J</b>

Notes and abbreviations on last page.

Table 2  
Concentrations of Constituents in Remedial Wells and  
Treatment System Effluents, Second Quarter 2018, Operable Unit 2,  
Northrop Grumman Systems Corporation,  
Bethpage, New York

**Notes and Abbreviations:**

- (1) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016c).  
(2) VOC samples analyzed using USEPA Method 8260C. 1,4-dioxane samples analyzed using USEPA Method 8270D-SIM.  
(3) Total VOC results rounded to two significant figures.  
**2.7** Bold value indicates a detection.  
**< 5.0** Compound is not detected above its laboratory quantification limit.  
**J** Constituent value is estimated.  
**µg/L** micrograms per liter  
**OU2** Operable Unit 2  
**REP** blind replicate sample  
**USEPA** United States Environmental Protection Agency  
**VOC** volatile organic compound

Table 3  
Vapor Sample Analytical Results for Treatment Systems,  
Second Quarter 2018,  
Northrop Grumman Systems Corporation,  
Operable Unit 2, Bethpage, New York

Constituents (Units in $\mu\text{g}/\text{m}^3$ )	Location ID: Sample ID:	96 MID-EFFLUENT T96 MIDTRAIN (AA)	96 SUP MIDTRAIN T96 SUP MIDTRAIN (AA)	96 EFFLUENT T96 EFFLUENT (AA)
		5/15/2018	5/15/2018	4/13/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1)</sup></b>				
1,1,1-Trichloroethane		10	<0.54	4.2
1,1,2,2-Tetrachloroethane		<0.69	<0.68	<0.55
1,1,2-Trichloroethane		0.54 J	<0.54	<0.44
1,1-Dichloroethane		40.9	5.3	28
1,1-Dichloroethene		132	78.9	49.2
1,2-Dichloroethane		1.6	<0.81	0.89
1,2-Dichloropropane		33	<0.92	<0.74
Benzene		0.48 J	<0.64	<0.51
Bromodichloromethane		<0.67	<0.66	<0.54
Bromoform		<0.41	<0.41	<0.33
Bromomethane		<0.78	<0.78	<0.62
Carbon Disulfide		<0.62	<0.62	<0.50
Carbon Tetrachloride		2.1	<0.25	0.51
Chlorobenzene		<0.92	<0.92	<0.74
Chloroethane		3.7	4.0	3.2
Chloroform		13	0.83 J	8.8
Chloromethane		1.2	1.4	3.1
cis-1,2-Dichloroethene		158	16	109
cis-1,3-Dichloropropene		<0.91	<0.91	<0.73
Dibromochloromethane		<0.85	<0.84	<0.68
Ethylbenzene		<0.87	<0.87	<0.69
Methylene Chloride		0.87	3.2	0.87
Styrene		<0.85	<0.85	<0.68
Tetrachloroethene		151	0.35	<0.22
Toluene		<0.75	0.64 J	0.83
trans-1,2-Dichloroethene		1.9	<0.79	0.99
trans-1,3-Dichloropropene		<0.91	<0.91	<0.73
Trichloroethylene		5430	14	232
Trichlorotrifluoroethane (Freon 113)		95.8	2.0	80.5
Vinyl Chloride		39.6	43.7	31.2
Xylene-o		<0.87	<0.87	<0.69
Xylene-m,p		<0.87	<0.87	<0.69
<b>Total VOCs<sup>(2)</sup></b>		<b>6116</b>	<b>170</b>	<b>553</b>

Notes and abbreviations on last page.

Table 3  
Vapor Sample Analytical Results for Treatment Systems,  
Second Quarter 2018,  
Northrop Grumman Systems Corporation,  
Operable Unit 2, Bethpage, New York

Constituents (Units in $\mu\text{g}/\text{m}^3$ )	Location ID: Sample ID:	96 INFLUENT T96 INFLUENT (AA)	96 EFFLUENT T96 EFFLUENT (AA)
		5/15/2018	5/15/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1)</sup></b>			
1,1,1-Trichloroethane		17	4.5
1,1,2,2-Tetrachloroethane		<0.69	<0.69
1,1,2-Trichloroethane		2.2	<0.55
1,1-Dichloroethane		37	8.9
1,1-Dichloroethene		110	46.4
1,2-Dichloroethane		2.3	0.61 J
1,2-Dichloropropane		83.2	1.8
Benzene		1.3	2.3
Bromodichloromethane		<0.67	<0.67
Bromoform		<0.41	<0.41
Bromomethane		<0.78	<0.78
Carbon Disulfide		<0.62	<0.62
Carbon Tetrachloride		3.4	0.47
Chlorobenzene		1.2	<0.92
Chloroethane		2.9	3.2
Chloroform		12	3.3
Chloromethane		1.1	4.7
cis-1,2-Dichloroethene		161	52.7
cis-1,3-Dichloropropene		<0.91	<0.91
Dibromochloromethane		<0.85	<0.85
Ethylbenzene		0.56 J	<0.87
Methylene Chloride		11	0.69
Styrene		<0.85	<0.85
Tetrachloroethene		712	1.8
Toluene		0.68 J	117
trans-1,2-Dichloroethene		1.7	0.63 J
trans-1,3-Dichloropropene		<0.91	<0.91
Trichloroethylene		17400	1590
Trichlorotrifluoroethane (Freon 113)		101	41
Vinyl Chloride		31.7	34.8
Xylene-o		<0.87	<0.87
Xylene-m,p		1.6	<0.87
<b>Total VOCs<sup>(2)</sup></b>		<b>18695</b>	<b>1915</b>

Notes and abbreviations on last page.

Table 3  
Vapor Sample Analytical Results for Treatment Systems,  
Second Quarter 2018,  
Northrop Grumman Systems Corporation,  
Operable Unit 2, Bethpage, New York

Constituents (Units in $\mu\text{g}/\text{m}^3$ )	Location ID:	102 INFLUENT	102 EFFLUENT
	Sample ID:	T102 INFLUENT (AA)	T102 EFFLUENT (AA)
<b>Volatile Organic Compounds (VOCs)<sup>(1)</sup></b>			
1,1,1-Trichloroethane		17	<0.44
1,1,2,2-Tetrachloroethane		<0.55	<0.55
1,1,2-Trichloroethane		1.4	<0.44
1,1-Dichloroethane		57.9	0.65
1,1-Dichloroethene		115	2.9
1,2-Dichloroethane		3.8	<0.65
1,2-Dichloropropane		5.5	<0.74
Benzene		0.77	<0.51
Bromodichloromethane		<0.54	<0.54
Bromoform		<0.33	<0.33
Bromomethane		<0.62	<0.62
Carbon Disulfide		<0.50	<0.50
Carbon Tetrachloride		4.2	<0.20
Chlorobenzene		<0.74	<0.74
Chloroethane		<0.42	<0.42
Chloroform		15	<0.78
Chloromethane		0.99	0.97
cis-1,2-Dichloroethene		236	2.8
cis-1,3-Dichloropropene		<0.73	<0.73
Dibromochloromethane		<0.68	<0.68
Ethylbenzene		<0.69	<0.69
Methylene Chloride		0.63	1.4
Styrene		<0.68	<0.68
Tetrachloroethene		205	0.28
Toluene		0.53 J	<0.60
trans-1,2-Dichloroethene		4.0	<0.63
trans-1,3-Dichloropropene		<0.73	<0.73
Trichloroethylene		1710	1.6
Trichlorotrifluoroethane (Freon 113)		95.0	<0.61
Vinyl Chloride		<0.082	<0.082
Xylene-o		0.35 J	<0.69
Xylene-m,p		0.87	<0.69
<b>Total VOCs<sup>(2)</sup></b>		<b>2474</b>	<b>11</b>

Notes and abbreviations on last page.

Table 3  
Vapor Sample Analytical Results for Treatment Systems,  
Second Quarter 2018,  
Northrop Grumman Systems Corporation,  
Operable Unit 2, Bethpage, New York

**Notes and Abbreviations:**

- (1) Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
- (2) Total VOCs represents the sum of individual concentrations of compounds detected rounded to the nearest whole
- Not Analyzed
- 3.4** bold value indicates a detection
- J Compound detected below its reporting limit; value is estimated.
- $\mu\text{g}/\text{m}^3$  micrograms per cubic meter
- ELAP Environmental Laboratory Approval Program
- NYSDOH New York State Department of Health
- USEPA United States Environmental Protection Agency
- VOC Volatile Organic Compound

Table 4A  
 Summary of AERMOD Air Quality Impact Analysis  
 Tower 96 Treatment System, Operable Unit 2,  
 Northrop Grumman Systems Corporation,  
 Bethpage, New York



Constituent	CAS#	T96 Effluent ( $\mu\text{g}/\text{m}^3$ ) 6/15/2018	Emission Rate <sup>(1)</sup>			Scaled Impact - Hourly <sup>(2)</sup> ( $\mu\text{g}/\text{m}^3$ )	Scaled Impact - Annual <sup>(3)</sup> ( $\mu\text{g}/\text{m}^3$ )	SGC(3) ( $\mu\text{g}/\text{m}^3$ )	AGC(3) ( $\mu\text{g}/\text{m}^3$ )	%SGC	%AGC
			Ib/yr	Ib/hr	g/s						
1,1,1 - Trichloroethane	00071-55-6	4.5	0.71	8.12E-05	1.02E-05	1.52E-03	4.45E-05	9,000	5,000	0.00%	0.00%
1,1 - Dichloroethane	00075-34-3	8.9	1.41	1.61E-04	2.02E-05	3.00E-03	8.80E-05	--	6.30E-01	--	0.01%
1,2 - Dichloroethane	00107-06-2	0.6	0.10	1.10E-05	1.39E-06	2.05E-04	6.03E-06	--	3.8E-02	--	
1,1 - Dichloroethene	00075-35-4	46.4	7.34	8.38E-04	1.06E-04	1.56E-02	4.59E-04	--	200	--	0.00%
Tetrachloroethene	00127-18-4	1.8	0.28	3.25E-05	4.09E-06	6.06E-04	1.78E-05	300	4	0.00%	0.00%
Trichloroethene <sup>(4)</sup>	00079-01-6	1590	251.46	2.87E-02	3.62E-03	5.35E-01	1.57E-02	20	2.00E-01	2.68%	7.86%
Vinyl Chloride <sup>(4)</sup>	00075-01-4	34.8	5.50	6.28E-04	7.92E-05	1.17E-02	3.44E-04	180,000	1.10E-01	0.00%	0.31%
cis 1,2-Dichloroethene	00156-59-2	52.7	8.33	9.51E-04	1.20E-04	1.77E-02	5.21E-04	--	63	--	0.00%
trans 1,2-Dichloroethene	00156-60-5	0.6	0.10	1.14E-05	1.43E-06	2.12E-04	6.23E-06	--	63	--	0.00%
Benzene <sup>(4)</sup>	00071-43-2	2.3	0.36	4.15E-05	5.23E-06	7.75E-04	2.27E-05	1,300	1.30E-01	--	--
Toluene	00108-88-3	117	18.50	2.11E-03	2.66E-04	3.94E-02	1.16E-03	37,000	5,000	0.00%	0.00%
1,2-Dichloropropane	00078-87-5	1.8	0.28	3.25E-05	4.09E-06	6.06E-04	1.78E-05	--	4	--	
Carbon Tetrachloride	00056-23-5	0.5	0.07	8.49E-06	1.07E-06	1.58E-04	4.65E-06	1900	0.17	--	0.00%
Chloroethane	00075-00-3	3.2	0.51	5.78E-05	7.28E-06	1.08E-03	3.16E-05	--	10,000	--	0.00%
Chloroform	00067-66-3	3.3	0.52	5.96E-05	7.51E-06	1.11E-03	3.26E-05	150	14.7	0.00%	0.00%
Chloromethane	00074-87-3	4.7	0.74	8.49E-05	1.07E-05	1.58E-03	4.65E-05	22,000	90	0.00%	0.00%
Dichloromethane	00075-09-2	0.7	0.11	1.25E-05	1.57E-06	2.32E-04	6.82E-06	14,000	60	0.00%	0.00%
Trichlorotrifluoroethane (Freon 113)	00076-13-1	41.0	6.48	7.40E-04	9.33E-05	1.38E-02	4.05E-04	960,000	180,000	0.00%	0.00%

Notes and Abbreviations on next page

Table 4A  
 Summary of AERMOD Air Quality Impact Analysis  
 Tower 96 Treatment System, Operable Unit 2,  
 Northrop Grumman Systems Corporation,  
 Bethpage, New York



**Notes and Abbreviations:**

(1) Emission rate calculated based on effluent concentration and a stack air flow rate of 4,787 cfm. The stack air flow rate (in acfm) is taken from the actual stack air flow rate on 5/15/2018.

Effluent temperature used in the model was 92 °F from direct read in-line gauge.

$$\text{Trichloroethene (lb/hr)} = (10 \text{ ug/m}^3) \times (4,787 \text{ ft}^3/\text{min}) \times (1 \text{ m}^3/35 \text{ ft}^3) \times (60 \text{ min/hr}) \times (0.000001 \text{ g/1 ug}) \times (0.0022 \text{ lb/g})$$

$$\text{lb/yr} = \text{lb/hr} \times 8,760 \text{ hrs/yr}$$

$$\text{g/s} = \text{lb/hr} \times 1 \text{ hr}/3,600 \text{ sec} \times 453.59 \text{ g/1 lb}$$

(2) Ambient impact based on AERMOD modeling using normalized rate of 1 g/s is scaled to the actual emission rate of the pollutant. Modeling was performed using the representative meteorological data from the nearest station (Farmingdale, NY) for the years 2011 through 2015, and a stack which is 55 feet high and 20 inches in diameter. The maximum impact from all the years was used for the calculations.

$$\text{Scaled hourly impact } (\text{ug/m}^3) = \text{AERMOD predicted hourly ambient impact at 1 g/s } ([\text{ug/m}^3]/[\text{g/s}]) \times \text{Actual emission rate (g/s)}$$

$$\text{Scaled annual impact } (\text{ug/m}^3) = \text{AERMOD predicted annual ambient impact at 1 g/s } ([\text{ug/m}^3]/[\text{g/s}]) \times \text{Actual emission rate (g/s)}$$

AERMOD Normalized Ambient Impact at 1 g/s	
Hourly (ug/m <sup>3</sup> /hr)	Annual (ug/m <sup>3</sup> )
148.05	4.35

(3) Short-term and annual guideline concentrations for air toxic pollutants specified in the NYSDEC DAR-1 AGC/SGC tables revised August 10, 2016.

(4) Vinyl Chloride and Benzene potential emission rates are less than 0.1 lb/hr and therefore below the trigger emissions for degree of air cleaning requirement (6 CRR-NY 212-2.3). TCE potential emissions are above the trigger limit and require a 12 month rolling average of annual emission to be maintained (see Table 5A) to demonstrate compliance with the 6 CRR-NY 212-2.2 500 lb/year requirement.

AGC	Annual Guideline Concentration	<b>10</b>	bold value indicates a detection
CAS #	Chemical Abstracts Service Registry Number	acfm	actual cubic feet per minute
CRR-NY	New York Codes, Rules and Regulations	g/s	grams per second
DAR-1	Division of Air Resources-1	µg/m <sup>3</sup>	micrograms per cubic meter
-	None Specified	lb/yr	pounds per year
NYSDEC	New York State Department of Environmental Conservation	lb/hr	pounds per hour
SGC	Short-term Guideline Concentration	J	Value is estimated

Table 4B  
Summary of AERMOD Air Quality Impact Analysis  
Tower 102 Treatment System, Operable Unit 2,  
Northrop Grumman Systems Corporation,  
Bethpage, New York

Constituent	CAS#	1/102 Effluent ( $\mu\text{g}/\text{m}^3$ ) 5/10/2018	Emission Rate <sup>(1)</sup>			Scaled Impact - Hourly <sup>(2)</sup> ( $\mu\text{g}/\text{m}^3$ )	Scaled Impact - Annual <sup>(2)</sup> ( $\mu\text{g}/\text{m}^3$ )	SGC <sup>(3)</sup> ( $\mu\text{g}/\text{m}^3$ )	AGC <sup>(4)</sup> ( $\mu\text{g}/\text{m}^3$ )	%SGC	%AGC
			lb/yr	lb/hr	g/s						
1,1 - Dichloroethane	00075-34-3	0.7	0.18	2.03E-05	2.55E-06	8.90E-04	5.83E-06	--	6.30E-01	--	0.00%
1,1 - Dichloroethene	00075-35-4	2.9	0.79	9.04E-05	1.14E-05	3.97E-03	2.60E-05	--	200	--	0.00%
Tetrachloroethene	00127-18-4	0.28	0.08	8.73E-06	1.10E-06	3.84E-04	2.51E-06	300	4	0.00%	0.00%
Trichloroethene <sup>(4)</sup>	00079-01-6	1.60	0.44	4.99E-05	6.28E-06	2.19E-03	1.44E-05	20	2.00E-01	0.01%	0.01%
cis 1,2-Dichloroethene	00156-59-2	2.8	0.76	8.73E-05	1.10E-05	3.84E-03	2.51E-05	--	63	--	0.00%
Chloromethane	00074-87-3	0.97	0.26	3.02E-05	3.81E-06	1.33E-03	8.70E-06	22,000	90	0.00%	0.00%
Dichloromethane	00075-09-2	1.4	0.38	4.36E-05	5.50E-06	1.92E-03	1.26E-05	14,000	60	0.00%	0.00%

**Notes and Abbreviations:**

(1) Emission rate calculated based on effluent concentration and a stack air flow rate of 8,264 cfm. The stack air flow rate (in acfm) is taken from the actual stack air flow rate on 5/10/2018.

Effluent temperature used in the model was 80°F from direct read in-line gauge.

Trichloroethene (lb/hr) = (1.6  $\mu\text{g}/\text{m}^3$ ) x (8,264  $\text{ft}^3/\text{min}$ ) x (1  $\text{m}^3/35 \text{ ft}^3$ ) x (60 min/hr) x (0.000001 g/1  $\mu\text{g}$ ) x (0.0022 lb/g)

lb/yr = lb/hr x 8,760 hrs/yr

g/s = lb/hr x 1 hr/3,600 sec x 453.59 g/1 lb

(2) Ambient impact based on AERMOD modeling using noramalized rate of 1 g/s is scaled to the actual emission rate of the pollutant. Modeling was performed using the representative meteorological data from the nearest station (Farmingdale, NY) for the years 2011 through 2015, and a stack which is 69.52 feet high and 24 inches in diameter. The maximum impact from all the years was used for the calculations.

Scaled hourly impact ( $\mu\text{g}/\text{m}^3$ ) = AERMOD predicted hourly ambient impact at 1 g/s ( $[\mu\text{g}/\text{m}^3]/[\text{g/s}]$ ) x Actual emission rate (g/s)

Scaled annual impact ( $\mu\text{g}/\text{m}^3$ ) = AERMOD predicted annual ambient impact at 1 g/s ( $[\mu\text{g}/\text{m}^3]/[\text{g/s}]$ ) x Actual emission rate (g/s)

AERMOD Normalized Ambient Impact at 1 g/s	
Hourly ( $\mu\text{g}/\text{m}^3/\text{[g/s]}$ )	Annual ( $\mu\text{g}/\text{m}^3/\text{[g/s]}$ )
348.85	2.29

(3) Short-term and annual guideline concentrations for air toxic pollutants specified in the NYSDEC DAR-1 AGC/SGC tables revised August 10, 2016.

(4) Vinyl Chloride and Benzene potential emission rates are less than 0.1 lb/hr and therefore below the trigger emissions for degree of air cleaning requirement (6 CRR-NY 212-2.3). TCE potential emissions are above the trigger limit and require a 12 month rolling average of annual emission to be maintained (see Table 5B) to demonstrate compliance with the 6 CRR-NY 212-2.2 500 lb/year requirement.

AGC	Annual Guideline Concentration	21	bold value indicates a detection
CAS #	Chemical Abstracts Service Registry Number	acfm	actual cubic feet per minute
CRR-NY	New York Codes, Rules and Regulations	g/s	grams per second
DAR-1	Division of Air Resources-1	$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
--	None Specified	lb/yr	pounds per year
NYSDEC	New York State Department of Environmental Conservation	lb/hr	pounds per hour
SGC	Short-term Guideline Concentration		

Table 5A  
Summary of TCE Mass Removal, Tower 96 Treatment System,  
Second Quarter 2018, Northrop Grumman Systems Corporation,  
Operable Unit 2, Bethpage, New York<sup>(1,2,3)</sup>



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Date	TCE Concentration ( $\mu\text{g}/\text{m}^3$ )				TCE Mass Emission <sup>(3)</sup> (lbs)	Percent of Allowable TCE Emissions <sup>(4)</sup> 12 Month Rolling Average
	T96 INFLUENT	T96 MIDTRAIN	T96 SUP MIDTRAIN	T96 EFFLUENT		
5/11/2017	(5)	21,600	4,800	NS	4,800	55
6/27/2017	(2,6)	19,700	4,030	NS	591	13
7/18/2017		NS	NS	NS	3,360	30
8/18/2017	(7)	NS	NS	NS	4,745	66
9/19/2017		12,100	6,610	3,670	6,130	87
12/13/2017		18,600	6,610	95	10	0.1
1/31/2018		NS	3,510	2,710	17	0.4
2/28/2018		13,000	2,860	3,930	86.5	1.0
4/13/2018		13,000	NS	NS	232	4.4
5/15/2018		17,400	5,430	14	1590	21.9

#### Notes and Abbreviations:

- (1) Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
- (2) A carbon change out was performed in Supplemental Bed 1 and new carbon was placed in the previously empty Supplemental Bed 2 on May 18, 2017.
- (3) TCE Mass Emission calculated based on the exhaust air flow rate on the day of sampling and the period of time since the preceding day of sampling.
- TCE (lb) = TCE Concentration [ $\mu\text{g}/\text{m}^3$ ] x Days x Flow Rate [ft<sup>3</sup>/min] x (1 m<sup>3</sup>/35 ft<sup>3</sup>) x (60 min/hr) x (24 hr/day) x (0.000001 g/1 ug) x (0.0022 lb/g)
- (4) Percent of allowable TCE emissions to date is a time-weighted annual rolling average based on the 500 lb/year emission limit specified in the CRR-NY 212-2.2 Table 2. High Toxicity Air Contaminant List, revised April 1, 2017.
- (5) For calculation purposes, the T96 MIDTRAIN concentration was used for the T96 Effluent result for May 11, 2017 as the T96 Effluent sample results were validated and rejected based on the use of non-dedicated sample collection fittings.
- (6) T96 Influent sample collected on 6/30/2017.
- (7) Sampling not conducted in August, the average of July and September effluent data and actual average air flow rate for the time period were used for estimated for August 18, 2017 calculations for August 18, 2017.

$\mu\text{g}/\text{m}^3$  micrograms per cubic meter

lbs pounds

CRR-NY Codes, Rules and Regulations of the State of New York

ELAP Environmental Laboratory Approval Program

NS not sampled

NYSDOH New York State Department of Health

SUP supplemental

TCE trichloroethylene

USEPA United States Environmental Protection Agency

VOC volatile organic compound

Table 5B  
 Summary of TCE Mass Removal, Tower 102 Treatment System,  
 Second Quarter 2018,  
 Northrop Grumman Systems Corporation, Operable Unit 2,  
 Bethpage, New York<sup>(1,2,3)</sup>

Date	TCE Concentration ( $\mu\text{g}/\text{m}^3$ )		TCE Mass Emission <sup>(2)</sup> (lbs)	Percentage of Allowable TCE Emissions <sup>(3)</sup>	
	T102 INFLUENT	T102 EFFLUENT		Period	12 Month Rolling Average
2/14/2017	7,150	20	0.9	0.01	1.1% 1.7%
6/30/2017	5,480	15	1.5	0.01	0.8% 0.9%
10/17/2017	3,990	40	3.0	0.03	2.0% 1.3%
12/21/2017	2,340	5	0.2	0.00	0.3% 1.1%
2/28/2018	2,970	4	0.2	0.00	0.2% 0.9%
5/10/2018	1,710	2	0.1	0.00	0.1% 1.2%

**Notes and Abbreviations:**

- (1) Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
- (2) TCE Mass Emission calculated based on the exhaust air flow rate on the day of sampling and the period of time since the preceding TCE (lb) = TCE Concentration [ $\mu\text{g}/\text{m}^3$ ] x Days x Flow Rate [ft<sup>3</sup>/min] x (1 m<sup>3</sup>/35 ft<sup>3</sup>) x (60 min/hr) x (24 hr/day) x (0.000001 g/1 ug) x (0.0022 lb/g)
- (3) Percent of allowable TCE emissions to date is a time-weighted annual rolling average based on the 500 lb/year emission limit specified in the CRR-NY 212-2.2 Table 2. High Toxicity Air Contaminant List, revised April 1, 2017.

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
lbs	pounds
ELAP	Environmental Laboratory Approval Program
NYSDOH	New York State Department of Health
T102	Tower 102
TCE	trichloroethene
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**



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Constituent (units in $\mu\text{g/l}$ )	Well ID Sample ID Date:	GM-13D GM-13D 6/13/2018	GM-15D GM-15D 6/6/2018	GM-15D2 GM-15D2 6/6/2018	GM-15I GM-15I 6/6/2018	GM-15SR GM-15SR 6/6/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>						
1,1,1-Trichloroethane		<b>0.42 J</b>	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		<b>3.7</b>	< 1.0	<b>0.31 J</b>	< 1.0	< 1.0
1,1-Dichloroethene		<b>2.4</b>	< 1.0	<b>0.64 J</b>	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0J	< 2.0J	< 2.0J	< 2.0J
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		<b>2.7</b>	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		<b>27.7</b>	< 1.0	<b>4.3</b>	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		<b>13.4</b>	<b>0.39 J</b>	<b>7.1</b>	<b>0.94 J</b>	<b>0.69 J</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>50</b>	<b>0.4</b>	<b>12</b>	<b>0.9</b>	<b>0.7</b>
<b>1,4 Dioxane<sup>(4,5)</sup></b>		<b>3.0</b>	< 0.17	<b>3.8</b>	<b>0.18 J</b>	<b>0.50</b>

See notes on last page

**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**

Constituent (parts in pg/L)	Well ID Sample ID Date	GM-17D GM-17D 6/6/2018	GM-17I GM-17I 7/13/2018	GM-18D GM-18D 6/13/2018	GM-18I GM-18I 7/5/2018	GM-20D GM-20D 6/28/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0	<b>0.29 J</b>
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		< 1.0	<b>0.55 J</b>	<b>0.41 J</b>	< 1.0	<b>49.9</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>0</b>	<b>0.6</b>	<b>0.4</b>	<b>0</b>	<b>50</b>
<b>1,4 Dioxane<sup>(4,5)</sup></b>		<b>7.8</b>	<b>7.7</b>	<b>12</b>	<b>6.6</b>	<b>5.1</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**

Constituent (units in µg/L)	Well ID Sample ID Date:	GM-20I GM-20I 6/28/2018	GM-21D GM-21D 6/18/2018	GM-21D2 GM-21D2 6/14/2018	GM-21I GM-21I 6/27/2018	GM-21S GM-21S 6/22/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		<b>0.49 J</b>	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	<b>3.2</b>	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		<b>0.58 J</b>	<b>1.1</b>	<b>11.6</b>	<b>0.84 J</b>	<b>0.46 J</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>1.1</b>	<b>1.1</b>	<b>13</b>	<b>0.8</b>	<b>0.5</b>
<b>1,4 Dioxane<sup>(4)</sup></b>		<b>5.8</b>	<b>4.6</b>	<b>5.2</b>	<b>6.5</b>	<b>4.2</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**

Constituent (units in µg/L)	Well ID Sample ID Date:	GM-33D2 GM-33D2 6/13/2018	GM-34D GM-34D 7/2/2018	GM-34D REP070218AD1 7/2/2018	GM-34D2 GM-34D2 6/7/2018	GM-35D2 GM-35D2 6/8/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		7.5	1.5 J	1.5 J	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	0.38 J	0.34 J	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	1.2	1.2	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	0.33 J	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	6.1	6.2	1.2	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		3.5	6.1	5.9	5.9	4.8
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		18.0	236 D	237 D	80.1	30.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>29</b>	<b>250</b>	<b>250</b>	<b>67</b>	<b>35</b>
<b>1,4 Dioxane<sup>(4,5)</sup></b>		14	18	19	13	8.3

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**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**

Constituent (parts in pg/L)	Well ID Sample ID Date:	GM-36D GM-36D 6/26/2018	GM-36D2 GM-36D2 6/26/2018	GM-37D GM-37D 6/29/2018	GM-37D2 GM-37D2 6/29/2018	GM-38D GM-38D 6/7/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>						
1,1,1-Trichloroethane		< 1.0	<b>0.51 J</b>	< 1.0	<b>0.46 J</b>	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	<b>0.85 J</b>	<b>0.36 J</b>	<b>1.4</b>	<b>0.43 J</b>
1,1-Dichloroethene		< 1.0	<b>0.73 J</b>	< 1.0	<b>0.58 J</b>	<b>0.49 J</b>
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	<b>0.41 J</b>
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	<b>0.51 J</b>	<b>3.4</b>
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		< 1.0	<b>3.2</b>	<b>11.0</b>	<b>2.5</b>	<b>80.2</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>0</b>	<b>5.3</b>	<b>11</b>	<b>5.5</b>	<b>85</b>
<b>1,4 Dioxane<sup>(4,5)</sup></b>		<b>1.7</b>	<b>4.2</b>	<b>0.77</b>	<b>0.83</b>	<b>4.5</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**



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Constituent (units in $\mu\text{g/l}$ )	Well ID Sample ID Date:	GM-38D2 GM-38D2 6/7/2018	GM-38D2 REP960718MS1 6/7/2018	GM-39DA GM-39DA 6/28/2018	GM-39DB GM-39DB 6/28/2018	GM-70D2 GM-70D2 6/27/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>						
1,1,1-Trichloroethane		<b>0.89 J</b>	<b>0.86 J</b>	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		<b>0.33 J</b>	<b>0.31 J</b>	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		<b>2.5</b>	<b>2.4</b>	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		<b>1.6</b>	<b>1.6</b>	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		<b>0.30 J</b>	<b>0.32 J</b>	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		<b>1.8</b>	<b>1.8</b>	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0	<b>2.1</b>
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		<b>117</b>	<b>117</b>	<b>0.52 J</b>	<b>1.1</b>	<b>7.0</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>120</b>	<b>120</b>	<b>0.5</b>	<b>1.1</b>	<b>9.1</b>
<b>1,4 Dioxane<sup>(4,5)</sup></b>		<b>3.9</b>	<b>3.9</b>	<b>5.2</b>	<b>3.9</b>	<b>7.9</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**

Constituent (units in µg/L)	Well ID Sample ID Date:	GM-71D2 GM-71D2 6/15/2018	GM-73D GM-73D 6/6/2018	GM-73D2 GM-73D2 6/6/2018	GM-73D3 GM-73D3 6/6/2018	GM-74D GM-74D 6/6/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>						
1,1,1-Trichloroethane		<b>1.4</b>	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		<b>4.8</b>	< 1.0	<b>0.29 J</b>	< 1.0	< 1.0
1,1-Dichloroethene		<b>2.7</b>	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		<b>0.48 J</b>	< 1.0	<b>0.36 J</b>	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		<b>0.63 J</b>	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	<b>1.5</b>	<b>0.84 J</b>	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		<b>11.7</b>	<b>33.4</b>	<b>27.1</b>	<b>1.7</b>	<b>1.1</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>22</b>	<b>33</b>	<b>29</b>	<b>2.5</b>	<b>1.1</b>
<b>1,4 Dioxane<sup>(4)</sup></b>		<b>2.2</b>	<b>4.9</b>	<b>3.3</b>	<b>0.94</b>	<b>5.3</b>

See notes on last page

**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**

Constituent (parts in ng/L)	Well ID Sample ID Date:	GM-74D2 GM-74D2 6/6/2018	GM-74D3 GM-74D3 6/22/2018	GM-74I GM-74I 6/6/2018	GM-78D2 GM-78D2 6/13/2018	GM-78D GM-78D 6/26/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		<b>0.46 J</b>	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		<b>0.80 J</b>	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		<b>3.3</b>	<b>4.4</b>	< 1.0	<b>0.86 J</b>	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		<b>8.1</b>	<b>5.8</b>	<b>1.2</b>	<b>26.0</b>	<b>2.0</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>13</b>	<b>10</b>	<b>1.2</b>	<b>27</b>	<b>2</b>
<b>1,4 Dioxane<sup>(4,5)</sup></b>		3.4	1.9	5.3	6.8	11

See notes on last page

**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**

Constituent (parts in pg/L)	Well ID Sample ID Date:	GM-78D2 GM-78D2 6/26/2018	GM-78I GM-78I 6/21/2018	GM-78S GM-78S 6/21/2018	GM-79D GM-79D 6/19/2018	GM-79I GM-79I 7/5/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	<b>1.1</b>	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	<b>0.97 J</b>	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	<b>0.50 J</b>	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		<b>1.1</b>	<b>4.4</b>	<b>0.95 J</b>	<b>29.8</b>	< 1.0
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>1.1</b>	<b>6.5</b>	<b>1.0</b>	<b>30</b>	<b>0</b>
<b>1,4 Dioxane<sup>(4,5)</sup></b>		14	<b>3.6</b>	3.7	6.2	4.1

See notes on last page

**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**

Constituent (parts in ppb)	Well ID Sample ID Date:	HN-40I HN-40I 6/20/2018	HN-40S HN-40S 6/20/2018	HN-42I HN-42I 6/19/2018	HN-42S HN-42S 6/19/2018	MW-3-I MW-3-I 6/11/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>						
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	<b>0.60 J</b>
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0	<b>1.8 J</b>
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	<b>2.7</b>
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	<b>2.6</b>
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	<b>0.31 J</b>	< 1.0	< 1.0	<b>0.46 J</b>
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	<b>15.6</b>
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0	<b>19.0</b>
Toluene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		<b>0.75 J</b>	< 1.0	< 1.0	< 1.0	<b>139</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0	<b>36.0</b>
<b>Total VOCs<sup>(3)</sup></b>		<b>0.8</b>	<b>0.3</b>	<b>0</b>	<b>0</b>	<b>220</b>
<b>1,4 Dioxane<sup>(4,5)</sup></b>		< 0.24	< 0.24	<b>0.52</b>	< 0.24	<b>17</b>

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**Table 6**  
**Concentrations of Volatile Organic Compounds**  
**and 1,4 Dioxane in Monitoring Wells,**  
**Second Quarter 2018, Operable Unit 2,**  
**Northrop Grumman Systems Corporation,**  
**Bethpage, New York**



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Constituent (parts in pg/L)	Well ID Sample ID Date:	N-10624 N-10624 6/27/2018	N-10627 N-10627 6/27/2018	N-10631 N-10631 6/27/2018	N-10631 REP062718CK1 6/27/2018
<b>Volatile Organic Compounds (VOCs)<sup>(1,2)</sup></b>					
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0	< 1.0
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Dichlormethane		< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene		<b>0.32 J</b>	<b>0.32 J</b>	<b>1.2</b>	<b>1.1</b>
Vinyl chloride		< 1.0	< 1.0	< 1.0	< 1.0
<b>Total VOCs<sup>(3)</sup></b>		<b>0.3</b>	<b>0.3</b>	<b>1.2</b>	<b>1.1</b>
<b>1,4 Dioxane<sup>(4)</sup></b>		<b>4.6</b>	<b>5.2</b>	<b>5.6</b>	<b>4.6</b>

See notes on last page

**Table 6**  
Concentrations of Volatile Organic Compounds  
and 1,4 Dioxane in Monitoring Wells,  
Second Quarter 2018, Operable Unit 2,  
Northrop Grumman Systems Corporation,  
Bethpage, New York

**Notes and Abbreviations:**

- (1) Samples were analyzed for VOCs using USEPA Method 8260C; samples were analyzed for 1,4-Dioxane using USEPA Method 8270D -SIM.
- (2) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016).
- (3) Total VOCs rounded to two significant figures.
- (4) HN-24I and FW-03 could not be sampled during Second Quarter 2018 due to NAVY PFAS sampling activities.

**Bold** Constituent detected

J Constituent value is estimated

D Concentration is based on a diluted sample analysis

REP Blind Replicate Sample

µg/L Micrograms per liter

VOCs Volatile Organic Compounds

<1.0 Compound not detected above its laboratory quantification limit.

Table 7  
 Concentrations of Metals and 1,4-Dioxane in Monitoring Wells<sup>(1)</sup>  
 Second Quarter 2018, Operable Unit 2  
 Northrop Grumman Systems Corporation  
 Bethpage, New York.

Constituent (units in µg/L)	Well ID: Sample ID: Date:	GM-16SR GM-16SR 6/6/2018	GM-78I GM-78I 6/21/2018	GM-78S GM-78S 6/21/2018	MW-02GF MW-02GF 6/18/2018	N-10631 N-10631 6/27/2018	N-10631 REP062718CK1 6/27/2018	PLT1 MW-04 PLT1 MW-04 7/1/2018	PLT1 MW-05 PLT1 MW-05 7/1/2018	PLT1 MW-06 PLT1 MW-06 7/1/2018
<b>Metals<sup>(2)</sup></b>										
Cadmium (Total)		--	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	--	--	--
Cadmium (Dissolved)		--	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	--	--	--
Chromium (Total)		<b>615</b>	< 10	< 10	<b>241</b>	<b>22.1</b>	<b>23.0</b>	< 10	<b>799</b>	<b>126</b>
Chromium (Dissolved)		<b>596</b>	< 10	< 10	<b>229</b>	<b>12.2</b>	<b>12.9</b>	< 10	<b>795</b>	<b>121</b>
<b>1,4-Dioxane<sup>(2,3)</sup></b>		<b>0.50</b>	<b>3.6</b>	<b>3.7</b>	<b>38</b>	<b>5.6</b>	<b>4.6</b>	< 0.24	< 0.24	< 0.24

**Notes and Abbreviations:**

- (1) Monitoring Well MW-1GF could not be sampled during Second Quarter 2018 due to access issues.
- (2) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016).
- (3) Samples were analyzed for 1,4-Dioxane using USEPA Method 8270D-SIM; samples were analyzed for Cadmium and Chromium using USEPA Method 6010C.

**Bold** Constituent detected  
**REP** Blind Replicate sample  
**µg/L** Micrograms per liter  
 -- Not analyzed  
 <3.0 Compound not detected above its laboratory quantification limit.

Table 8  
 Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Outpost Wells<sup>(1)</sup>  
 Second Quarter 2018, Operable Unit 2,  
 Northrop Grumman Systems Corporation  
 Bethpage, New York

Constituents (units in µg/L)	Well ID	BPOW 1-1	BPOW 1-2	BPOW 1-3	BPOW 1-4	BPOW 1-5	BPOW 1-6	BPOW 2-1	BPOW 2-2	BPOW 2-3	BPOW 3-1	BPOW 3-2	BPOW 3-3	BPOW 3-4	BPOW 3-4	BPOW 4-1R <sup>(3)</sup>	BPOW 4-2R <sup>(3)</sup>
	Sample ID	4/13/2018	4/13/2018	4/12/2018	4/17/2018	4/17/2018	4/17/2018	4/11/2018	4/11/2018	4/20/2018	4/12/2018	5/30/2018	4/16/2018	4/16/2018	4/16/2018	4/12/2018	4/19/2018
<b>Volatile Organic Constituents<sup>(2, 4)</sup></b>																	
1,1,1-Trichloroethane		<b>0.27 J</b>	<b>0.32 J</b>	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<b>0.48 J</b>	<b>0.45 J</b>	<b>0.14 J</b>	< 0.50
1,1,2,2-Tetrachloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-trichloro-1,2,2-trifluoroethane		< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<b>3.5</b>	<b>3.4</b>	<b>18.1 J</b>	<b>9.0</b>
1,1,2-Trichloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<b>1.8</b>	<b>1.7</b>	< 0.50	< 0.50
1,1-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<b>0.61</b>	<b>0.62</b>	< 0.50	< 0.50
1,1-Dichloroethene		< 0.50	<b>0.29 J</b>	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<b>4.6</b>	<b>4.4</b>	<b>0.65</b>	<b>0.33 J</b>
1,2-Dichloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloropropane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
2-Butanone (MEK)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-Pentanone		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Acetone		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromoform		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Bromomethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbon Disulfide		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbon Tetrachloride		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<b>3.0</b>	<b>3.0</b>	<b>0.25 J</b>	<b>0.24 J</b>
Chlorobenzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chlorodibromomethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chloroform		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<b>2.5</b>	<b>2.4</b>	<b>0.81</b>	< 0.50
Chloromethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	<b>2.4</b>	<b>2.3</b>	< 0.50	< 0.50
cis-1,3-Dichloropropene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Dichloromethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Ethylbenzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
m&p-Xylenes		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Methyl N-Butyl Ketone (2-Hexanone)		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
o-Xylene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Styrene (Monomer)		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Tetrachloroethene		&lt															

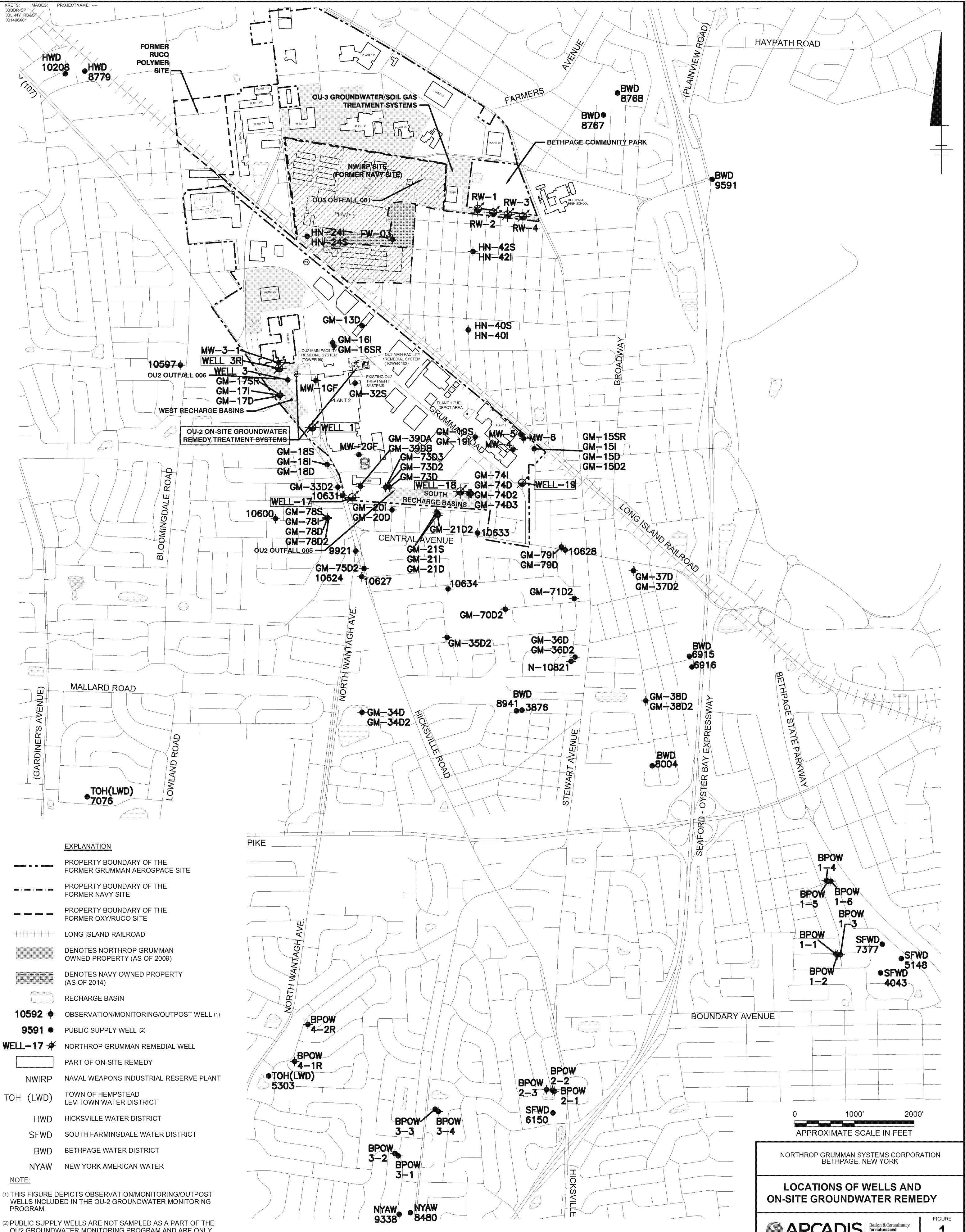
Table 8  
 Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Outpost Wells <sup>(1)</sup>  
 Second Quarter 2018, Operable Unit 2,  
 Northrop Grumman Systems Corporation  
 Bethpage, New York

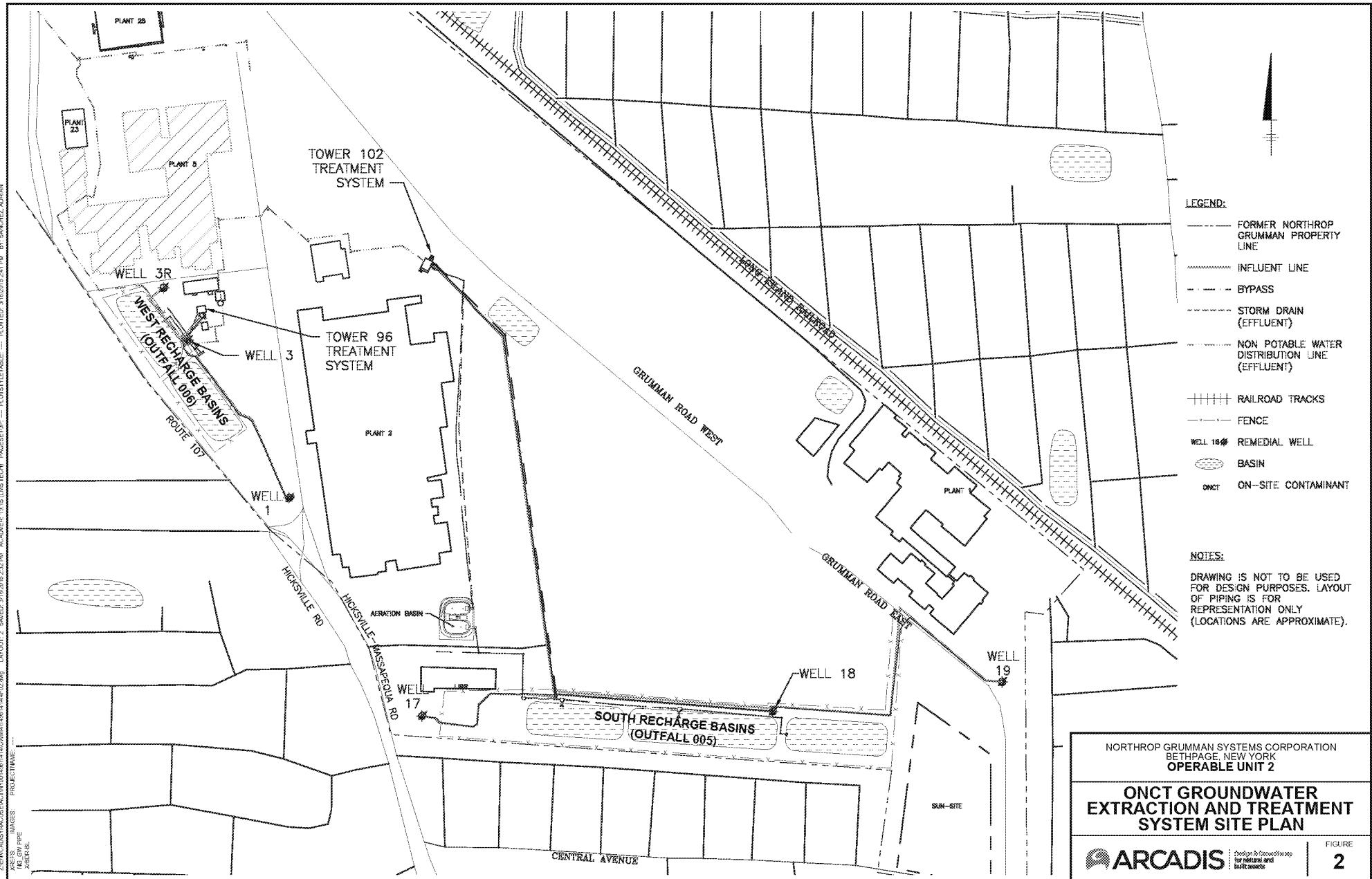
**Notes and Abbreviations:**

- (1) These outpost wells have been recently repurposed for use as plume monitoring wells per the June 2015 Groundwater Monitoring Plan Addendum (ARCADIS of New York, Inc., 2015) as conditionally approved by the NYSDEC (August 25, 2015). Therefore, TVOC trigger levels that may have been previously established are no longer shown
  - (2) Samples were analyzed for VOCs using USEPA Method 524.2; samples were analyzed for 1,4-Dioxane using USEPA Method 522 -SIM
  - (3) The NAVY abandoned original Wells BPOW4-1 and BPOW4-2 and installed replacement Wells BPOW4-1R and BPOW4-2R between August, 2014 and October, 2014
  - (4) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016)
  - (5) TVOCs are rounded to two significant figures
- Bold** Value indicates constituent detected
- REP Blind Replicate Sample
- TVOCs Total Volatile Organic Compounds
- USEPA United States Environmental Protection Agency
- VOC Volatile Organic Compounds
- µg/L micrograms per liter
- <0.5 Compound not detected above its laboratory quantification limit.
- J Value is estimated concentration

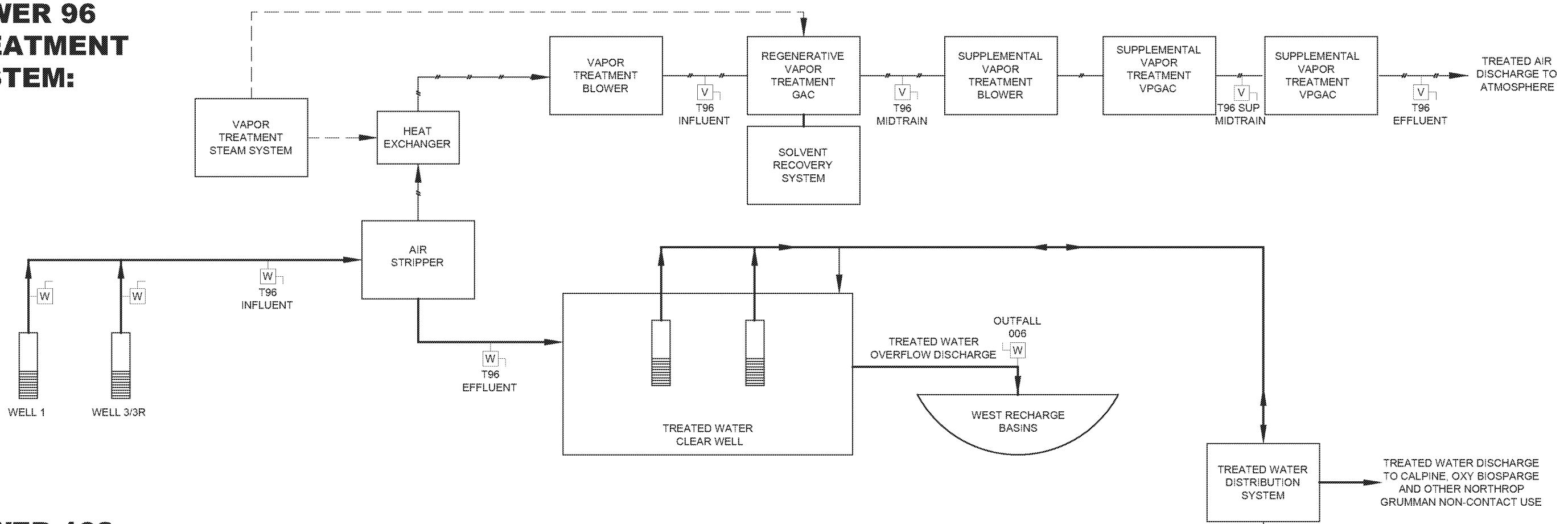
# FIGURES







## TOWER 96 TREATMENT SYSTEM:



## TOWER 102 TREATMENT SYSTEM:

